

Book Review: Lonesome George: The Life and Loves of a Conservation Icon

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contribution to the section of the volume relates to a more recent aspect of scientific research: the growth of American probe microscopy in the 1980s. The essay addresses the meshing of pedagogical issues with concerns about the roles of tacit and experimental knowledge in different settings where a new technique—a new way of generating knowledge—is at stake.

The third set of essays (*The Action of Textbooks*) examines how science textbooks are imbued with historicity. Far from seeing such books simply as the paper repositories of established knowledge, the claim here is that many science texts reflect considerable creativity on the part of their authors, for example, in the ways in which their contents are organized and presented and in the ways in which they accommodate contemporary scientific controversies. Antonio García-Belmar and his colleagues illustrate this claim with reference to nineteenth century French chemistry textbooks while Karl Hall focuses attention on Landau and Lifshitz's *Course of Theoretical Physics*, a set of textbooks which, despite its development during the worst years of Stalin's tyranny, became a global best-seller. Any chemistry undergraduate during the 1950s will immediately recall the valence-bond and molecular-orbital approaches to quantum chemistry, although few are likely to have seen, in the different diagrammatic representations of the chemical bond, the issues that form the subject of Buhm Soon Park's essay that completes this section of the book. He explores the integral role played by pedagogy in bringing about the notable change from the valence-bond theory strongly associated with the chemist Linus Pauling to the molecular orbital theory developed by the mathematician C.A. Coulson and his protégé, the theoretical chemist H. Christopher Longuet-Higgins.

The two essays that form the fourth section of this book (*Generational Reproduction*) offer accounts of the ways in which knowledge and skill are passed from one generation of scientists and engineers to another. The focus of Kathryn Olesko's study is Kohlrausch's *Leitfaden der praktischen Physik*, first published in 1879 and issued in a twenty-fourth edition in 1996. Drawing principally upon the earlier years of Kohlrausch's text, she explores how and why it achieved canonical status, relating this to such factors as the diverse and changing nature of his readership, the use of a disciplinary rather than a pedagogical approach to organizing the contents, and its ability to adapt to, and meet the needs of, a wide and expanding group of students. In contrast, Sharon Traweek's essay has a much more contemporary flavour that directs attention to three sites in Japan undertaking research in

particle physics. She shows how today, as in the past, decisions about how and where to create new knowledge are closely entwined with decisions about how to train those who will create that knowledge.

The standard of scholarship in this volume is uniformly high and the book fills something of the gap between institutional and disciplinary studies of science on the one hand, and intellectual or conceptual studies on the other. While the level of detail and the range of studies mean it is likely to be mainly of interest to scholars within the science studies community, the book offers some important insights to those concerned with science education and the public understanding of science. The various essays make clear some of the ways in which the generation, validation and transmission of scientific knowledge is much more subtle and complex than they are commonly represented. Appreciating that subtlety and complexity must be a goal for any programme directed at how science 'works', but no-one should underestimate the scale of the challenge.

Edgar Jenkins

Henry Nicholls, Henry, *Lonesome George: The Life and Loves of a Conservation Icon* (London: Macmillan, 2006), 231pp. \$24.95/£16.99. ISBN: 1403945764 \$24.95/£16.99
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'Lonesome George' refers to a Galapagos tortoise who has become an icon amongst conservation biologists. Henry Nicholls has written a biography of this creature, interspersing his account of George's 'life and loves' with wider discussions of Galapagos history and modern conservation tactics. He also describes some of the recent, bitter political disputes in the archipelago—as the interests of research biologists, tourist companies, and extractive businesses come into collision. Nicholls uses this biography to reinforce messages about the importance of conservation. In the process, he contributes another instance of the familiar image of scientists as heroic contributors to the saving of life on Earth.

In a narrow frame, this book is not too bad. The research is sound. The set pieces on ecology, genetics, and evolution are easily digestible. The writing balances personal and technical voices. Nichols uses his own curiosity about the Galapagos as the narrative thread. This book can serve as a starting point for those who know nothing about the current research, or protests, taking place in the archipelago. It also serves as an example for those fascinated with the current

move in popular science writing towards 'creative non-fiction.' *Lonesome George* nicely displays both the strengths and the weaknesses of this evolving genre.

In the wider frame, Nicholls' book disappoints. As a piece of science writing, it's strangely old-fashioned. The discussion of scientific information too often panders (e.g. chapter 4 on taxonomy) or wanders off the trail (e.g. chapter 10 on cloning). This book is heavily peppered with anthropomorphism, sentimentality, and eco-imperialism. I refuse to believe science communicators have no better rhetorical tools than personification and heroism for accomplishing their goals. This book is heavily salted with the message that 'science knows best,' offering the only saviour to a crisis of someone else's making. I'm surprized Nicholls' research and descriptive work is not balanced with better interpretation and context.

The book suffers from a worrisome tunnel vision. *Lonesome George* is the last of a population of tortoises resident on Pinta Island. His death will mark the end of a subspecies. How important an event is this in the grand scheme of our world in 2006? Nicholls' tunnel vision offers no context for understanding what is being lost here. Biologically speaking, the Pinta subspecies already is extinct. It takes two to tango, and George has no mate of his own kind. Even if one were found, it takes a population's genetic diversity to ensure viability in the long term. Whatever else it is, this pursuit of preservation is a lost biological cause.

And what is it precisely that's going extinct here? Do n't be fooled by the formal names; they hide an underlying continuity. George represents one local variety of one species of tortoise. Ecologically, that's important, I suppose. At the same time, local varieties have a rather more ephemeral status in evolutionary biology than Nicholls lets on. A local variety is as precious as a language's local dialect. I would be sad if the Texan accent disappeared from spoken English. But surely we can agree that English as a language would not be doomed, and few outside Texas would dispute the claim we have bigger problems on our hands. The sense of magnitude attributed to such things as the loss of 'a whole subspecies' is an artefact of the names taxonomists use. Building a sense of grave and disturbing loss is out of proportion with the ecological and evolutionary importance of this animal's disappearance. Such writing is sensationalism masquerading as science. Causing so much anxiety and guilt over a problem whose impact is so small simply exploits readers. Worse, it's the

tactical error of crying wolf. With so much hyperbole in conservation writing, no wonder we consistently fail to build political consensus.

The tunnel vision has a deeper impact. This book follows a wider cultural fetish for particulars. One lost whale. One brain-dead patient. One politician's mistake. One crying mother. Such fetishes give writers convenient objects for rhetorical focus. I appreciate that it's hard to describe diffuse and less objectifiable subjects. Cultivating fetishes is easy to do and easy to follow. But this approach shifts attention away from more important matters, and authors who create these fetishes are culpable in wider processes of wilful ignorance. Forget George. What will happen to the Galapagos when sea levels rise by two metres, air temperatures rise by 3C, and oceanic or atmospheric currents radically shift?

There's another plain truth in the demise of George's kind. It comes from our own over-consumption. In the Age of Sail, the Galapagos served as a restaurant for ships heading into the open Pacific. We humans ate large numbers of George's kin for supper. Afterwards, our naturalists unsustainably collected more for our museums. Then we delivered competitors to his ecosystem because we had other purposes. We directly caused this demise. To be fair, Nicholls describes these processes. But is his heroic tale of intense last-minute efforts to breed George supposed to offer some kind of redemption? Does it somehow absolve us, or science, of blame? I think not. We do n't forgive an abusive spouse when they bring flowers to the hospital bedside. I do n't feel absolution knowing that a few researchers are working desperately hard to breed George. As a human and as a devotee of natural history museums, I have to live with the knowledge that my people caused this. I should use my knowledge of that culpability to avoid the same said about me in 100 years. The triumph in this story will come not when George successfully breeds, but when we avoid repeating this all-too-frequent error. In setting his spotlight so narrowly on scientific preservation in the Galapagos archipelago, Nicholls actively hides our larger culpabilities. He robs us of a chance for greater triumph. For me, that diminishes this book, regardless of how well Nicholls tells his narrowly framed story.

Finally, like so many other books about the Galapagos, Nicholls presents the archipelago through the eyes of his own cultural priorities. For him, science and pristine nature are the moral goods. Everything else is extractive and somehow reducing; things to be prevented. I visited the Galapagos a few years ago on a tour much like the one that first took Nicholls. What struck

me about the archipelago was how much more it involved than the nature park described by science. Significant amounts of agricultural goods are exported, for instance, including highly-prized beef. There are lively ports servicing the route from Panama to Tahiti. Ecuadorians invest in the tourist industry to support their own economic development. They well know conservation is the root of that development, and many jealously protect the nature parks from the same extractive interests science condemns. More important, many on the mainland have an intense pride in their stewardship of the islands and force politicians to act accordingly. I'm no apologist for these groups, but it's far too common for outsiders to see the archipelago simply as our own nature park and forget to include Ecuadorian voices in the conversation about these islands. I

suppose the self-centred view helps us forget the fact that it's our own tourism and extractive interests that drive much of the unsustainable development in the archipelago. But that does n't make it right.

In sum, if you seek a narrowly framed tale of one tortoise—icon of preservation that he is – and the efforts of scientists to breed him, then this is a book for you. If you want more from science writing than tunnel vision and active ignorance, then look further. This is an opportunity squandered. Rather than a passionate or reflective discussion of his views, Nicholls delivers Bambi in a hard shell.

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